

AMENDMENTS TO THE SPECIFICATION

Two paragraphs beginning at page 21, line 10:

--The present invention uses a small dispensing needle 400, as illustrated on Figure 13. Typically, the inside diameter of needle 400 is 0.003 inch with an outside diameter of 0.012 inches. This provides a 0.0045-inch wall section. Dispensing needle 400 is fitted inside of a supporting needle 410 having an inside diameter of 0.016 inch allowing a slip fit of the outside diameter of the dispensing needle. Needles 400 and 410 are bonded at the tops thereof with a suitable material, such as UV cured epoxy or polyurethane adhesive, to form a liquid-tight seal 420. Needles 400 and 410 together form a needle assembly, generally indicated by the reference numeral ~~420~~ 422.

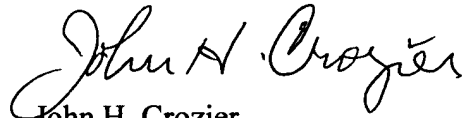
As shown on Figure 14, each needle assembly ~~420~~ 422 is connected with a sleeve 430 of suitable material to a pump tube 432. Pump tube 432 is of a suitable cross section and length for the designed delivery volume. Pump tube 432 is retained between a rigid back up plate, or anvil, 434 and a piezo crystal assembly 436. The available movement of piezo crystal assembly 436 is also a variable in this equation. As is shown on Figure 15, multiple pump tubes 436 and their associated delivery needle assemblies ~~420~~ 422 may be operated by one piezo crystal assembly 436. Piezo crystal assembly 436 is contained within the same anvil assembly 434 such that an increase in size of the piezo crystal causes a decrease in size of pump tubes 432. This provides the necessary pumping action, by displacement. Referring principally to Figure 14, the other end of pump tube 432 is connected to a small fast acting solenoid valve 440 such as used in ink jet printing. During the dispense part of the cycle solenoid valve 440 is closed, blocking flow from pump tube 432 at that end. Only the orifice end of needle 400 remains open to the atmosphere.--

AMENDMENT
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PATENT
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Respectfully submitted,

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